Cure (Split Population) Models in Parametric Survival Analysis

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In survival analysis standard parametric theory assumes that if followed for a long enough period, all components/patients fail eventually. Cure (split population) models aim to relax this assumption when it is appropriate to do so. These models build on existing parametric theory in survival analysis by assuming that some proportion of the patients/components are 'cured' of the event of interest. A parameter for this proportion is then incorporated into the log-likelihood equation. The so called `split population' model takes its name from the fact that it 'splits' the log-likelihood into 'cured' and 'diseased or susceptible' parts. Recent developments in this field allow for mixture as well as non-mixture models to be fit. Standard parametric models and these cure models will be applied to a study of survival times of patients who have undergone a kidney transplant at the Addington Hospital, Durban, South Africa, during the period January 1990 to December 2004.